

Authors

Paul S. Bagus

Research Division, San Jose, California

Dr. Bagus is currently manager of the surface structure and dynamics project at the San Jose laboratory. He received his B.S. (1958), M.S. (1958), and Ph.D. (1965) degrees from the University of Chicago, majoring in physics. He has worked at the Argonne National Laboratory, Illinois, where he was a member of the Solid State Division. From 1966-67, he was a visiting professor at the University of Paris. Dr. Bagus first joined the Research Division in 1968 and since that time has worked on the theory of electronic structure in matter. He is a member of the American Physical Society.

Charles W. Bauschlicher, Jr.

National Aeronautics and Space Administration, Langley AFB, Virginia

Dr. Bauschlicher received a B.S. in chemistry from the State University of New York at Stony Brook in 1972, and a Ph.D. in theoretical chemistry from the University of California at Berkeley in 1976. He was a visiting scientist at the San Jose Research Laboratory during 1975 and 1976 under a joint study agreement with the Lawrence Berkeley Laboratory, where he was a member of the Department of Chemistry and Materials and Molecular Research Division until the end of 1977. He is now on the staff of the NASA Institute for Computer Applications in Science and Engineering.

Christopher R. Brundle

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Before joining IBM in 1975 Dr. Brundle was a lecturer in physical chemistry at the University of Bradford, England. He received a B.S. in chemistry from Manchester University, England, in 1965, and a Ph.D. from Imperial College, London, in 1968. His thesis work and his subsequent research at Bell Laboratories (1969 to 1971) involved the development and use of ultraviolet photoelectron spectroscopy (UPS) for electronic structure studies on free molecules. At Bradford (1971 to 1975) he combined UPS and x-ray photoemission to study adsorption at surfaces. Since joining the surfaces, thin films, and plasma science department at San Jose, Dr. Brundle has extended this work to include other surface-sensitive techniques, such as low energy electron diffraction, Auger spectroscopy, and secondary ion mass spectrometry. Dr. Brundle is Editor of the *Journal of Electron Spectroscopy* and a coauthor of *Molecular Photoelectron Spectroscopy*. He is a member of the American Chemical Society, The American Physical Society, the Chemical Society (U.K.), and the Institute of Physics (U.K.).

Tung J. Chuang

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Dr. Chuang received his B.S. from National Taiwan University in 1963 and his M.S. from the University of Illinois, Urbana, in 1966. After obtaining his Ph.D. in chemistry from the University of California at Berkeley in 1970, he joined the molecular physics department of the San Jose research laboratory as a postdoctoral fellow. In 1971 he began his present staff assignment in the surfaces, thin films, and plasma science department. Dr. Chuang has been involved in the study of ultra-fast molecular processes by means of picosecond laser spectroscopy and is currently making electron spectroscopic studies of the surface properties of metals and alloys and of gas-solid interactions. He is a member of the American Chemical Society, the American Vacuum Society, and Sigma Xi.

Joseph E. Demuth

Research Division, Yorktown Heights, New York

Dr. Demuth is a staff member in the physical sciences department at the Thomas J. Watson Research Center. He is involved with ultrahigh vacuum studies of clean surfaces, chemisorption, and surface reactions, and is currently interested in using ultraviolet photoelectron spectroscopy to study the chemical bonding and reaction of small hydrocarbons on transition metal surfaces. In 1968 he received a B.S. degree in physics from Rensselaer Polytechnic Institute, Troy, New York. He joined IBM, as a postdoctoral fellow, after receiving his Ph.D. degree in applied physics at Cornell University, Ithaca, New York, in 1973. Dr. Demuth is a member of the American Physical Society, the American Vacuum Society, and Sigma Xi.

Donelli J. DiMaria

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Dr. DiMaria is a staff member in the applied research department and is currently working on the electrical and photoelectrical properties of thin film insulators. He joined IBM at the Thomas J. Watson Research Center in 1973 as a postdoctoral fellow. Dr. DiMaria received his B.S. in engineering physics with highest honors in 1968, his M.S. in physics in 1970, and his Ph.D. in physics in 1973, all from Lehigh University, Bethlehem, Pennsylvania. He is a member of Phi Beta Kappa and Tau Beta Pi.

Richard Flitsch

System Products Division, East Fishkill, New York

Mr. Flitsch is an advisory chemist in the technical assurance and analysis group. His current activity is in the application of the electron stimulated chemical analysis technique to development and manufacturing problems. In 1959 he received his B.A. in chemistry from Hunter College, New York City. Mr. Flitsch was employed at the National Bureau of Standards, Washington, DC from 1959 to 1964, when he joined IBM. He is a member of the American Chemical Society.

William R. Hunter

Research Division, Yorktown Heights, New York

Dr. Hunter is in the exploratory silicon technology group at the Thomas J. Watson Research Center, where he joined IBM in 1971. In 1964 he received his B.S. from Princeton University in electrical engineering. At the University of Illinois he received his M.S. in 1965 and his Ph.D. in 1971, both from the physics department. His current interests are in the area of advanced and exploratory silicon FET processing technology. Dr. Hunter is a member of Sigma Xi.

Josef F. Graczyk

Research Division, Yorktown Heights, New York

Dr. Graczyk joined the Thomas J. Watson Research Center in 1971. In the physical sciences department he has studied the structural properties and transformations of amorphous materials. His current work includes the study of thin films by means of electron diffraction and electron microscopy, and the investigation of mechanisms for electron image formation and energy loss in these films; he has contributed to the design and development of computerized scanning electron diffraction systems which utilize electron energy filtering techniques. Dr. Graczyk received his Ph.D. in 1968 from the Massachusetts Institute of Technology, majoring in materials science. He is a member of the American Physical Society, the Electron Probe Analysis Society, Eta Kappa Nu, and Sigma Xi.

Rudolf Ludeke

Research Division, Yorktown Heights, New York

Dr. Ludeke joined IBM as a member of the applied research department at the Thomas J. Watson Research Center in 1968. His current interests include the structural and electronic properties of semiconductor surfaces and the growth of semiconductor materials by molecular beam epitaxy. He received a B.S. degree in electrical engineering from the University of Cincinnati, Ohio, in 1961, and an M.A. in 1962 and a Ph.D. in 1968 in applied physics from Harvard University. Dr. Ludeke is a member of Eta Kappa Nu, Tau Beta Pi, Sigma Xi, and the American Physical Society. He is presently an Alexander von Humboldt Foundation Fellow at the Max Planck Institute for Solid State Physics, Stuttgart, Germany.

Kosal Chandra Pandey

Research Division, Yorktown Heights, New York

Dr. Pandey joined IBM in 1976 and is currently a member of the physical sciences department at the Thomas J. Watson Research Center. His technical interests include theoretical studies of the electronic and atomic structure of surfaces and of photoemission. He received a Ph.D. in physics from Columbia University, New York, in 1975. Dr. Pandey is a member of the American Physical Society, the American Vacuum Society, and Sigma Xi.

Stanley I. Raider

Research Division, Yorktown Heights, New York

Dr. Raider joined IBM at East Fishkill, New York, in 1967 after receiving a Ph.D. degree in chemistry from the State University of New York at Stony Brook. He is currently on temporary assignment in the applied research department at the Thomas J. Watson Research Center where he is working in an exploratory cryogenics area. In 1972, Dr. Raider received an IBM Outstanding Contribution Award for his studies of thin-insulator-film failure mechanisms. He is a member of the American Vacuum Society and the Electrochemical Society.

Henry F. Schaefer III

University of California at Berkeley

Dr. Schaefer is an Associate Professor of Chemistry in the Department of Chemistry and Materials and Molecular Research Division at the Lawrence Berkeley Laboratory, where he is interested in quantum mechanical studies of the electronic structure of atoms and molecules. He received his B.S. from the Massachusetts Institute of Technology in 1966 and his Ph.D. in chemistry from Stanford University in 1969. Since 1972, Dr. Schaefer has been a consultant and coordinator for a joint study project with the University of California and the IBM San Jose Research Laboratory. Dr. Schaefer is an Alfred P. Sloan Foundation Fellow, and a member of the American Physical Society, Phi Lambda Upsilon, and Sigma Xi.

Carlos M. Serrano

Research Division, Yorktown Heights, New York

Mr. Serrano joined IBM in 1974 at the Thomas J. Watson Research Center in the interface physics department. He is now an electron microscopist in the e-beam lithography group working on dislocations in semiconductors. Mr. Serrano received an associate degree from the RCA Institute, New York, in 1974. He is a member of the American Association for the Advancement of Science.

Eva E. Simonyi

Research Division, Yorktown Heights, New York

Ms. Simonyi first came to the Thomas J. Watson Research Center in 1974 from the Yeshiva University Belfer Graduate School of Sciences, New York, where she had worked as a technical associate in the physics department. Her main interests are in the development of growth techniques for organic thin films and in the characterization of those films, with particular emphasis on the preparation of oriented films. She received a Diplom-physicist degree from Kossuth Lajos Tudományegyetem in Hungary in 1951.

Jerry B. Torrance

Research Division, San Jose, California

Dr. Torrance joined the Thomas J. Watson Research Center in Yorktown Heights in 1969, after receiving his Ph.D. degree in applied physics from Harvard University. His B.S. and M.S. degrees in physics were from Stanford University in 1963 and the University of California at Berkeley in 1966. While at Yorktown, he worked as a staff engineer in the solid state cooperative phenomena group of the physical sciences department. In 1973 Dr. Torrance received an IBM Outstanding Contribution Award for his work on bound magnetic polarons. He transferred to the San Jose laboratory in 1976 and is now working on the study and development of conductive organic materials. He is a member of the American Chemical Society and the American Physical Society.

Klaus R. Wandelt

Physikalisch-Chemisches Institut der Universität Munich, West Germany

From January 1976 to April 1977, Dr. Wandelt was an IBM World Trade postdoctoral fellow (Germany) at the Research Division's San Jose laboratory, where he was involved in surface science research. He received the Diplom-Chemiker in 1971 from the University of Hanover, West Germany. His Ph.D. was granted from the Institute for Physical Chemistry at the University of Munich in 1975, where his thesis work was on electron-spectroscopic studies of clean and oxidized alloy surfaces. After completing his postdoctoral fellowship, Dr. Wandelt returned to the University of Munich where he is continuing his chemisorption studies.

Harold F. Winters

Research Division, San Jose, California

Dr. Winters is a member of the research staff and is currently working in the fields of surface science, electron physics, and plasma science. He joined IBM in 1963 and has in the past been involved in thin film work and ion implantation. He received a B.S. degree in physics in 1958 from Whitworth College, Spokane, Washington. He subsequently received a Ph.D. degree in physics from Washington State University, Pullman. Dr. Winters is a member of the American Association for the Advancement of Science, the American Scientific Affiliation, and the American Vacuum Society.

Donald R. Young

Research Division, Yorktown Heights, New York

Dr. Young is manager of interface physics at the Thomas J. Watson Research Center, where he is working on electron trapping in SiO_2 . His studies have included research on ferroelectrics and superconductors. Dr. Young was previously manager of the surface physics department in the Components Division in Poughkeepsie and subsequently in East Fishkill, New York. Previously he worked at the M.I.T. Radiation Laboratory from 1942 to 1949. Before joining IBM in 1949, he received a B.S. in physics from Utah State, Logan, in 1942 and a Ph.D. in physics from the Massachusetts Institute of Technology, Cambridge, in 1949. Dr. Young is a fellow of the American Physical Society and a member of Sigma Xi.